Notice No.3

for the Code for Lifting Appliances in a Marine Environment July 2016

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note for the corrigenda items paragraphs, Tables and Figures are not shown in their entirety. Corrigenda items show amendments only.

Issue date: June 2017

Amendments to	**Effective date**
Chapter 1, Section 1	1 July 2017
Chapter 1, Section 3	Corrigenda
Chapter 4, Section 2	1 July 2017
Chapter 4, Section 2	Corrigendum
Chapter 5, Section 3	1 July 2017
Chapter 5, Section 3	Corrigenda
Chapter 10, Sections 2 & 4	1 July 2017
Chapter 12, Section 1	Corrigenda
Chapter 13, Sections 2 & 3	1 July 2017

Lloyd's Register

Working together
for a safer world

Chapter 1
General

■ *Section 1*
Introduction

1.2 Certification

1.2.7 If LR certification of loose gear is requested or when LR is certifying or classing the lifting appliance directly associated to the loose gear item (e.g. grabs, hooks blocks, *see Ch 8, 3.5 Hook blocks)*, then the minimum requirements for the issue by LR of certification for loose gear in accordance with the Code are:

(a) Plan Approval of the structural arrangements or LR Type Approval;
(b) verification of materials;
(c) survey of the loose gear item; and
(d) testing of the loose gear item (reference is made to *Ch 12 Testing, Marking and Surveys*).

Deviations from the above procedure will be subject to special consideration and agreement by LR.

Plan Approval may not be required for designs which are fully in compliance with a recognised National or International Standard and where the standard is compatible with the proposed environment and design of the lifting appliance. In all other cases, the loose gear items are to be designed as per the applicable requirements of *Ch 8 Fittings, Loose Gear and Ropes*.

Other loose gear items, such as shackles, swivels, chains, rings and similar items are not normally required to be certified by LR and manufacturer's certificates will be accepted provided that the items have the required Safe Working Load (SWL) and are made of acceptable material.

Existing paragraphs 1.2.7 to 1.2.10 have been renumbered 1.2.8 to 1.2.11.

■ *Section 3*
Plans and information to be submitted

3.3 Crane systems

3.3.1 The following plans and calculations are to be submitted for approval:

(d) Details of sheaves, axles, pivot pins, wheels, ~~spreader beams,~~ slewing ring, slewing ring bolts, and similar items.
(e) Details of blocks, chains, shackles, hooks, spreader beams and other loose gear, indicating material, safe working load (SWL), proof loads (PL) and the standard to which they have been manufactured.

Chapter 4
Cranes and Submersible Lifting Appliances

■ *Section 2*
Shipboard cranes

2.11 Forces due to ship motion

(*Part only shown*)

Table 4.2.3 Forces due to ship motions

Source	Component of force, in Newtons		
		Parallel to deck	
	Normal to deck	Transverse	Longitudinal
DYNAMIC			
Heave:			
Roll	$0,05\ W \dfrac{L_{pp}}{T_h^2} \cos\varphi$	$0,05\ W \dfrac{L_{pp}}{T_h^2} \sin\varphi$	
Pitch	$0,05\ W \dfrac{L_{pp}}{T_h^2} \cos\psi$		$0,05\ W \dfrac{L_{pp}}{T_h^2} \sin\psi$
Combined	$0,05\ W \dfrac{L_{pp}}{T_h^2} \cos(0,71\varphi)\cos(0,71\psi)$	$0,05\ W \dfrac{L_{pp}}{T_h^2} \sin(0,71\varphi)$	$0,05\ W \dfrac{L_{pp}}{T_h^2} \sin(0,71\psi)$

2.11.6 The following combinations of static and dynamic forces are to be considered:

(a) Rolling motion only:
Static roll + dynamic roll + dynamic heave (at roll angle φ).

(b) Pitching motion only:
Static pitch + dynamic pitch + dynamic heave (at pitch angle ψ).

(c) Combined motion:
~~Static combined + 0,8 (dynamic roll + dynamic pitch + dynamic heave (at roll angle φ) + dynamic heave (at pitch angle ψ)).~~
Static combined + 0,8 (dynamic roll + dynamic pitch) + dynamic heave combined.

In each case, the component of force due to wind is to be included where applicable.

2.22 Allowable stress – Buckling failure of thin walled cylinders

2.22.3 For components subject to bending the critical buckling stress is given by:

(b) For ~~σ_{cb}~~ σ_{bb}[1] $\geq 0,5\sigma_y$

Chapter 5
Shiplift and Transfer Systems

■ *Section 3*
Materials of construction

3.1 Materials for classed installations

3.1.2 Structural steel in the primary load path, including pins and wheels, are to be supplied with ~~*Ch 5, 3.2 Materials for certificated installations*~~ 3.2 certification, in accordance with EN 10204 or equivalent.

~~3.1.3 Steel for the primary strength members is to comply with *Table 5.3.1 Steel Grades*.~~

~~**Table 5.3.1 Steel Grades**~~

Minimum design temperature	Thickness, in mm	Steel grade
Above 10°C	$t \le 40$	A/AH
	$40 < t \le 80$	D/DH
	$t > 80$	E/EH
10°C to 0°C	$t \le 20$	A/AH
	$20 < t \le 25$	B/AH
	$25 < t \le 40$	D/DH
	$t > 40$	E /EH
0°C to –10°C	$t \le 12{,}5$	B/AH
	$12{,}5 < t \le 25{,}5$	D/DH
	$t > 25{,}5$	E/EH
~~–10°C to –25°C~~	~~$t \le 40$~~	~~D/DH~~

3.1.3 Steel for the primary strength members is to comply with *Table 4.2.17 Charpy V-notch impact test temperature requirements for welded primary and secondary steel structure. Excludes stainless steel, Table 4.2.18 Charpy V-notch test energy requirements for classed and certified lifting appliances* and *Table 4.2.19 Charpy V-notch impact test temperature requirements for non-welded components (excluding slew bearings) subject to tensile loading. Excludes stainless steels*. The Charpy V-notch impact test requirements for minimum design temperatures above +10°C will be specially considered.

3.2 Materials for certified installations

3.2.2 The requirements with respect to toughness criteria are those for classed installations, *see* ~~*Table 5.3.1 Steel Grades*~~ *Ch 5, 3.1 Materials for certified installations 3.1.3* and *Table 5.5.2 Failure stress*.

3.2.3 Structural steel in the primary load path, including pins and wheels, is to be supplied with ~~*Ch 5, 3.1 Materials for classed installations*~~ 3.1 certification in accordance with EN 10204 or equivalent.

Chapter 10
Electrotechnical Systems

■ *Section 2*
Control, alarm and safety systems

2.1 General

2.1.2 Where certification of a lifting appliance is required, the equipment is to be examined and tested under working conditions for compliance with the appropriate National or International Standard. Plans for control systems are not required to be submitted except for Lifts for passengers and crew and lifts and ramps for cargo handling which are also to satisfy the requirements of *Ch 10, 3 Control and supervision of lifts for passengers and crew* and *Ch 10, 4 Control and supervision of lifting appliances for cargo handling*.

■ *Section 4*
Control and supervision of lifting appliances for cargo handling

4.5 Cranes

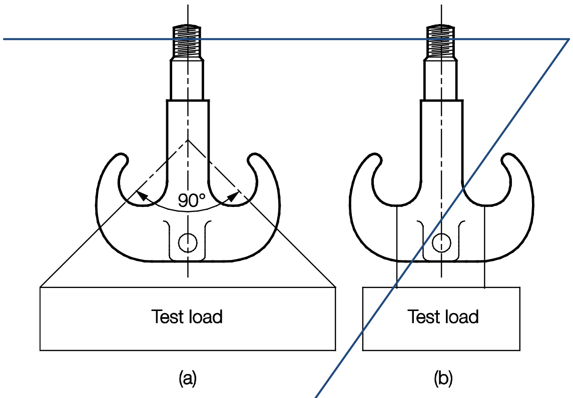
4.5.2 Means are to be provided for emergency operation, to enable any load to be safely lowered and positioned. Emergency operation is defined as operation in the event of a failure of the main power supply.

Chapter 12
Testing, Marking and Surveys

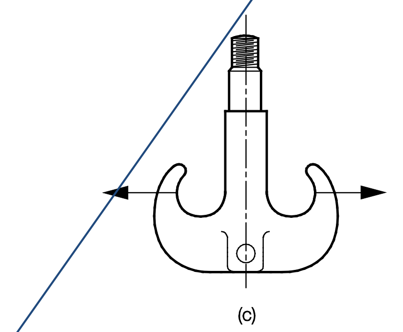
■ *Section 1*
Testing

1.2 Loose gear

1.2.5 ~~The proof load may be applied to a Ramshorn hook as indicated in *Figure 12.1.2 Testing of Ramshorn hooks*, but in the latter case an additional load of half the proof load is subsequently to be applied as in *Figure 12.1.2 Testing of Ramshorn hooks.*~~ The proof load may be applied to a Ramshorn hook as indicated in *Figure 12.1.2 Testing of Ramshorn hooks (Method A: Position for vertical test load)* or *Figure 12.1.3 Testing of Ramshorn hooks (Method B: Position for vertical test load)*, but in the latter case an additional load of half the proof load is subsequently to be applied as in *Figure 12.1.4 Testing of Ramshorn hooks (Method B: Position for horizontal test load)*.

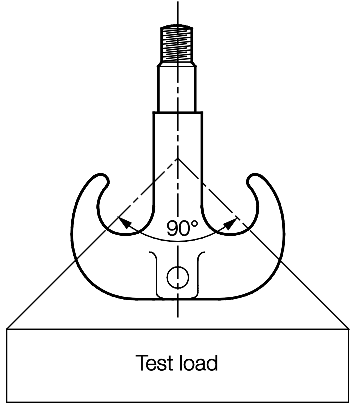


Position for vertical test load



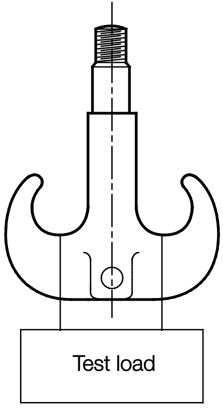
Position for horizontal test load

~~**Figure 12.1.2 Testing of Ramshorn hooks**~~



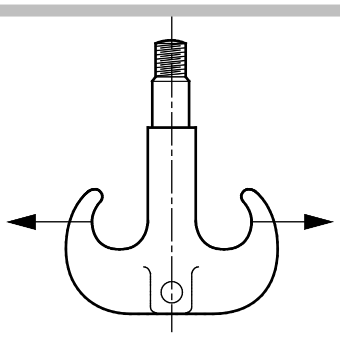
Method A: Position for vertical test load

Figure 12.1.2 Testing of Ramshorn hooks (Method A: Position for vertical test load)



Method B: Position for vertical test load

Figure 12.1.3 Testing of Ramshorn hooks (Method B: Position for vertical test load)



Method B: Position for horizontal test load

Figure 12.1.4 Testing of Ramshorn hooks (Method B: Position for horizontal test load)

Chapter 13
Documentation

■ *Section 2*
Certification procedure

2.6 Certification procedure

(*Part only shown*)

Table 13.2.1 Minimum requirements for the certification of lifting appliances

Certification process step	Component	Required or issued documentation	References
1 Plan Approval	Structural arrangements	Design Appraisal Document (issued by LR)	*Ch 1 General, Ch 2 Derrick Systems*, *Ch 3 Launch and Recovery Appliances for Survival Craft and Rescue Boats*, *Ch 4 Cranes and Submersible Lifting Appliances*, *Ch 5 Shiplift and Transfer Systems*, *Ch 6 Ro-Ro Access Equipment*, *Ch 7 Lifts*, *Ch 8 Fittings, Loose Gear and Ropes* and *Ch 9 Machinery* (all as applicable)
	Hydraulic cylinders (*see Ch 9, 5 Hydraulic cylinders* in particular)		~~*Ch 2 Derrick Systems,*~~*Ch 1 General, Ch 3 Launch and Recovery Appliances for Survival Craft and Rescue Boats*, *Ch 4 Cranes and Submersible Lifting Appliances*, *Ch 5 Shiplift and Transfer Systems*, *Ch 6 Ro-Ro Access Equipment*, *Ch 7 Lifts*~~*, Ch 8 Fittings, Loose Gear and Ropes*~~ and *Ch 9 Machinery* (all as applicable)
2 Verification of materials Remark: Where materials are not manufactured at an LR approved works check testing may be required at the discretion of the Surveyor	Structural materials	'Manufacturer's certificate' as defined in *Ch 1, 3 Certification of materials* of the *Rules for the Manufacture, Testing and Certification of Materials* (equivalent to inspection certificate EN 10204, 3.1)	LR *Rules for the Manufacture, Testing and Certification of Materials* (or approved equivalent) Relevant Chapters of this Code
	Winches (main load-bearing and safety-critical components)		
	Hydraulic cylinders (main load-bearing and safety-critical components) (*see Ch 9, 5 Hydraulic cylinders* in particular)		
	Wire ropes		
	Loose gear		
	Other similar main components not listed in the above		
4 Survey during manufacturing	Structural arrangements (e.g. jib, crane house, etc.), hydraulic cylinders, winches (as applicable), loose gear, etc.	General inspection certificate (LR Form Number 1123 or 1124 issued by LR)	*Ch 12, 3 Survey requirements* (as applicable)
~~4~~ 5 Survey of the lifting appliance	Complete lifting appliance ~~(including loose gear, etc.)~~	General inspection certificate (LR Form Number 1123 or 1124 issued by LR)	~~N/A~~ *Ch 12, 3 Survey requirements* (as applicable)
~~5~~ 6 Testing and survey of the lifting appliance on installation (on board)	Complete lifting appliance	LA.2 (or LA.2U) (issued by LR)	*Table 13.1.1 Certificates for certification* in *Chapter 13 Documentation* (as applicable)
~~6~~ 7 Register of the Ship's Lifting Appliances and Cargo Handling Gear	Complete lifting appliance	LA.1 (issued by LR)	*Table 13.1.1 Certificates for certification* in *Chapter 13 Documentation* (as applicable)
~~7~~ 8 Subsequent Periodical Surveys of the lifting appliance as required by *Ch 12 Testing, Marking and Surveys*	Complete lifting appliance	Endorsements of Parts I and II of the LA.1 or equivalent (endorsed by LR or a competent person or organisation)	*Ch 12 Testing, Marking and Surveys* and *Ch 13 Documentation* (as applicable)

■ *Section 3*
Classification procedure

3.1 General

(*Part only shown*)

Table 13.3.1 Minimum requirements for the classification of lifting appliances

Classification process step	Component	Required or issued documentation	References
1 Plan Approval	Structural arrangements	Design Appraisal Document (issued by LR)	*Ch 1 General*, *Ch 2 Derrick Systems*, *Ch 3 Launch and Recovery Appliances for Survival Craft and Rescue Boats*, *Ch 4 Cranes and Submersible Lifting Appliances*, *Ch 5 Shiplift and Transfer Systems*, *Ch 6 Ro-Ro Access Equipment*, *Ch 7 Lifts*, *Ch 8 Fittings, Loose Gear and Ropes* and *Ch 9 Machinery* (all as applicable)
	Hydraulic cylinders (*see Ch 9, 5 Hydraulic cylinders* in particular)		*Ch 1 General*, ~~*Ch 2 Derrick Systems*,~~ *Ch 4 Cranes and Submersible Lifting Appliances*, *Ch 5 Shiplift and Transfer Systems*, *Ch 6 Ro-Ro Access Equipment*, *Ch 7 Lifts* ~~*Ch 8 Fittings, Loose Gear and Ropes*~~ and *Ch 9 Machinery* (all as applicable)
2 Verification of materials Remark: Materials are required to be delivered from a Lloyd's Register approved works	Structural materials	'LR certificate' or 'Manufacturer's certificate validated by LR' as defined in *Ch 1,3 Certification of materials* of the *Rules for the Manufacture, Testing and Certification of Materials* (equivalent to inspection certificate EN 10204, 3.2)	LR *Rules for the Manufacture, Testing and Certification of Materials* Relevant Chapters of this Code
	Winches (main load-bearing components)		
	Hydraulic pipes/hoses		
	Hydraulic cylinders (main load-bearing and safety critical components) (*see Ch 9, 5 Hydraulic cylinders* in particular)		
	Wire ropes		
	Loose gear		
	Gearing	'Manufacturer's certificate' as defined in *Ch 1,3 Certification of materials* of the *Rules for the Manufacture, Testing and Certification of Materials* (equivalent to inspection certificate EN 10204, 3.1)	
	Other similar main components not listed in the above	'LR certificate' or 'Manufacturer's certificate validated by LR, as defined in *Ch 1,3 Certification of materials* of the *Rules for the Manufacture, Testing and Certification of Materials* (equivalent to inspection certificate EN 10204, 3.2)	
4 Survey during manufacturing	(a) Structural arrangements (e.g. jib, crane house, hydraulic cylinders, winches, loose gear, etc.) (b) Electrical/control arrangements (c) Machinery arrangements (e.g. winches, hydraulics, etc.)	General inspection certificate (LR Form Number 1123 or 1124 issued by LR)	*Ch 12, 3 Survey requirements* (as applicable)
~~4~~ 5 Survey of the lifting appliance	Complete lifting appliance ~~(including loose gear, etc.)~~	General inspection certificate (LR Form Number 1123 or 1124 issued by LR)	~~N/A~~ *Ch 12, 3 Survey requirements* (as applicable)
~~5~~ 6 Testing and survey of the lifting appliance on installation (on board)	Complete lifting appliance	LA.2 (or LA.2U) (issued by LR)	*Table 13.1.1 Certificates for certification* in *Chapter 13 Documentation* (as applicable)
~~6~~ 7 Register of the Ship's Lifting Appliances and Cargo Handling Gear	Complete lifting appliance	LA.1 (issued by LR)	*Table 13.1.1 Certificates for certification* in *Chapter 13 Documentation (as applicable)*
~~7~~ 8 Certificate of Classification	Complete lifting appliance	Certificate of Classification of Lifting Appliances and Associated Gear (issued by LR)	*Table 13.1.1 Certificates for certification* in Chapter 13 *Documentation* (as applicable)
~~8~~ 9 Subsequent Periodical Surveys of the lifting appliance as required by *Ch 12 Testing, Marking and Surveys*	Complete lifting appliance	Endorsement of Parts I and II of the LA.1 (endorsed by LR)	*Ch 12 Testing, Marking and Surveys* and *Ch 13 Documentation* (as applicable)

© Lloyd’s Register Group Limited 2017

Published by Lloyd’s Register Group Limited
Registered office (Reg. no. 08126909)
71 Fenchurch Street, London, EC3M 4BS
United Kingdom

Lloyd’s Register and variants of it are trading names of Lloyd’s Register Group Limited, its subsidiaries and affiliates. For further details please see http://www.lr.org/entities

Lloyd's Register Group Limited, its subsidiaries and affiliates and their respective officers, employees or agents are, individually and collectively, referred to in this clause as ‘Lloyd's Register’. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.